

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Douglas R. Anton,
Carl G. Krespan,
and Allen C. Sievert

Appeal No. 95-1256
Application No. 08/043,917¹

ON BRIEF

Before WINTERS, WILLIAM F. SMITH, and LORIN, Administrative Patent Judges.

LORIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1-16, which are all of the claims pending in this application.² On consideration of the record, we reverse and remand to the examiner with instructions to consider the issue developed

¹ Application for patent filed April 7, 1993. According to applicants, this application is a continuation-in-part of Application 07/964,973, filed October 22, 1992, now abandoned.

² In a previous decision (paper no. 15), the application was remanded to the examiner for consideration of a Petition and Information Disclosure Statement. They have now been considered.

infra and to take appropriate action.

Representative Claim

Claim 1 is representative of the subject matter on appeal and reads as follows:

1. A process for producing a compound of the formula RCFZH wherein R is selected from the group consisting of SF₅, CF₂SF₅ and R_fCF₂Y, wherein R_f is a perfluoroalkylene group containing from 1 to about 12 carbon atoms and optionally containing one or more ether oxygen atoms, Y is selected from the group consisting of H, F and SF₅, and Z is selected from the group consisting of F, CH₃ and CF₂CF₃ comprising: reacting an iodide compound of the formula R'CFZI with hydrogen at an elevated temperature of about 400°C or less in the absence of metal-based hydrogenation catalysts, wherein R' is selected from the group consisting of SF₅, CF₂SF₅ and R_fCF₂X and wherein X is selected from the group consisting of H, F and SF₅ and I, provided that when Y is F, X is F, when Y is SF₅, X is SF₅ and when Y is H, X is H or I.

Background

As the representative claim indicates, the claimed invention is directed to the production of hydrofluoro compounds containing carbon or carbon and sulfur atoms. In particular, the “invention provides a process for producing monohydro and dihydro compounds from corresponding monoiodo and diiodo compounds” (specification, p. 3, lines 6-8) by way of a hydrogenolysis reaction “accomplished in the absence of hydrogenation catalysts” (specification, p. 5, line 16).

Grounds of Rejection

We direct our attention to the grounds of rejection set forth in the examiner's answer (paper no. 10, mailed June 6, 1994). Rejections under 35 U.S.C. § 103 over the Olstowski reference (US Patent 3,042,727) and under 35 U.S.C. § 112, second paragraph, from the Final Rejection (Paper No. 5, mailed November 23, 1993) have been dropped.

The sole reference relied on is:

R.N. Haszeldine (Haszeldine), "Reactions of Fluorocarbon Radicals. Part XII. The Synthesis of Fluorocarbons and of Fully Fluorinated Iodo-, Bromo-, and Chloroalkanes.", J. Chem. Soc. (July 13, 1953), pp. 3761-3768.

The claims under appeal stand rejected as follows:

Claims 1-16 are rejected under the enablement requirement of 35 U.S.C. § 112, first paragraph.

Claims 1-16 are rejected under 35 U.S.C. § 103 over Haszeldine.

DISCUSSION

Enablement

The examiner (examiner's answer, sentence bridging pp. 4-5) states that it "would require undue experimentation to determine the combinations or reaction parameters which would give the desired result for each of the myriad starting materials having diverse structures included by the instant claims." In effect, the examiner's position is that the specification does not provide the necessary information to determine the appropriate conditions to produce each and every species broadly encompassed by the claimed formula.

In considering this issue, we note that appellants are not required to disclose every parameter encompassed by the claims. See In re Angstadt, 537 F.2d 498, 190 USPQ 214 (CCPA 1976). However, there must be sufficient disclosure, either through illustrative examples or terminology to teach those of ordinary skill in the art how to make and use the invention as broadly as it is claimed. See In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). It is the examiner's burden to show that one skilled in the art would have to resort to undue experimentation in order to practice the invention as broadly claimed. Here, speculation, rather than a persuasive legal or technical reason, has been given as to why the specification does not reasonably enable one skilled in the art to practice the invention as broadly as it is claimed and without undue experimentation. See In re Marzocchi, 439 F.2d 220, 169 USPQ 367 (CCPA 1971).

The specification gives 5 Examples (pages 8-11) describing in detail starting materials, reactors, reaction temperatures and pressures, and accompanying cooling, warming and evacuating steps. The reaction conditions, including preferred temperatures, mole ratios for the starting materials, and the hydrogen, are clearly described in the specification (pp. 6-7). Furthermore, the hydrogenolysis technology of the examples and specification

is not an unpredictable art (see Background of the Invention, specification, p. 1, lines 14-34). See In re Fisher, 427 F.2d 833, 166 USPQ 18 (1970), where the court stated that the scope of enablement varies inversely with the degree of unpredictability of the involved factors. While some experimentation may be required to determine the right conditions for particular starting materials, we do not consider such experimentation to be undue. As explained in PPG Indus., Inc. v. Guardian Indus. Corp., 75 F.3d 1558, 1564, 37 USPQ2d 1618, 1623 (Fed. Cir. 1996):

In unpredictable art areas, this court has refused to find broad generic claims enabled by specifications that demonstrate the enablement of only one or a few embodiments and do not demonstrate with reasonable specificity how to make and use other potential embodiments across the full scope of the claim. *See, e.g., In re Goodman*, 11 F.3d 1046, 1050-52, 29 USPQ2d 2010, 2013-15 (Fed. Cir. 1993); *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1212-14, 18 USPQ2d 1016, 1026-28 (Fed. Cir.), *cert. denied*, 502 U.S. 856, 112 S.Ct. 169, 116 L.Ed.2d 132 (1991); *In re Vaeck*, 947 F.2d at 496, 20 USPQ2d at 1445. Enablement is lacking in those cases, the court has explained, because the undescribed embodiments cannot be made, based on the disclosure in the specification, without undue experimentation. But the question of undue experimentation is a matter of degree. The fact that some experimentation is necessary does not preclude enablement; what is required is that the amount of experimentation must not be unduly extensive. Atlas Powder Co., v. E.I. DuPont de Nemours & Co., 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984). The Patent and Trademark Office Board of Appeals summarized the point well when it stated:

The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed.

Ex parte Jackson, 217 USPQ 804, 807 (1982).

The specification provides adequate guidance to the technician of ordinary skill to practice the embodiments covered by the claims. Through routine experimentation, one can determine the hydrogenolysis conditions, among all those encompassed by the claims, which, when applied to one of the claimed iodo starting materials, would obtain the corresponding hydrofluoro compound product.

Obviousness

All the pending claims are rejected over Haszeldine.

Claim 1, the sole independent claim, teaches “reacting an iodide compound . . . with hydrogen at . . . about 400⁰C or less in the absence of metal-based hydrogenation catalysts.” Appellants (brief, p. 9) admit that they “have not distinguished the Claim 1 process from the Haszeldine process on the basis of reactants” and since Haszeldine teaches (pp. 3763 and 3766) reacting fluoro-iodide compounds with hydrogen at 350⁰C, the prima facie case of obviousness depends on whether Haszeldine suggests conducting the reaction in the absence of metal-based hydrogenation catalysts.

According to the examiner (examiner’s answer, paper no. 10, p. 7, lines 5-6), “Haszeldine discloses a process wherein no catalyst is disclosed (page 3763)”. The passage in question reads:

The fully fluorinated iodoalkanes are converted into the corresponding 1H-compounds by reaction with alcoholic potassium hydroxide at *ca.* 100⁰ (cf. Banus, Emeleus, and Haszeldine, *J.*, 1951, 60), or with hydrogen at 350⁰.

Appellants (brief, p. 9) argue that “the present claims which recite the absence of metal-

based hydrogenation catalysts, are clearly distinguished from the Haszeldine reactions discussed at page 3766 which use a Raney nickel catalyst.” That passage reads:

Replacement of Iodine in fully Fluorinated Iodoalkanes by Hydrogen, Chlorine, Bromine, or Fluorine. – (a) *By hydrogen.* Alcoholic potassium hydroxide (400% of 10%) was heated with the fluoro-iodide (3 g.) at 100-130° for 10 hr. to give the corresponding 1H-fluorocarbons shown in the Table:… The compounds C₃F₇H, C₄F₉H, and C₅F₁₁H were also obtained (>80%) by reaction of the corresponding fluoro-iodides with hydrogen (60 atm.) at 350° in the presence of Raney nickel catalyst. . . .

Resolving whether Haszeldine discloses using a catalyst or not will determine if a prima facie case of obviousness has been established. To that end we are mindful that

The ever present question in cases within the ambit of 35 U.S.C. 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the teachings of the prior art at the time the invention was made. It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Wesslau, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965)

To meet the examiner’s burden of establishing a prima facie case, the examiner relies on a passage disclosing a reaction “with hydrogen at 350°C” (Haszeldine, p. 3763). This is relied on to the exclusion of a later more explicit instruction to conduct the reaction with “hydrogen (60 atm.) at 350°C in presence of Raney nickel catalyst” (Haszeldine, p. 3766). Examiner ignores the fact that the latter passage is included within a section called “EXPERIMENTAL” (p. 3764) and, as the smaller print suggests, explains in further detail what the earlier disclosure summarizes. It is clear that, after reading Haszeldine in its entirety, the earlier passage is an abridged version of the only method Haszeldine contemplates - one which uses a Raney nickel catalyst.

Even if the latter passage did not further describe the process, the earlier disclosure alone could not support a prima facie case of obviousness. “To establish a *prima facie* case of obviousness based on a combination of the content of various references, there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant”. In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). The aforementioned earlier passage is directed to a reaction “with hydrogen at 350°C”. A specific step of conducting the reaction in the absence of a catalyst is missing. To support a prima facie case of obviousness against appellants’ noncatalyst process, first, examiner would have to fill the missing disclosure by showing that hydrogenation reactions can be successfully practiced without a metal catalyst and, second, provide some motivation for doing so when conducting Haszeldine’s hydrofluoro compound-producing process. Examiner’s rejection relies wholly on Haszeldine without explaining why one of ordinary skill in the art would have been motivated to conduct the reaction as claimed.

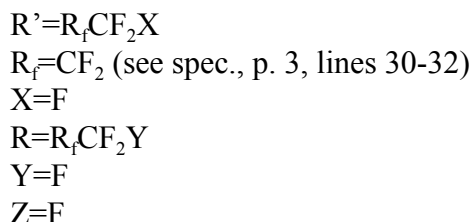
For the stated reasons, a prima facie case has not been established and therefore the rejection involving Haszeldine is reversed.

Other Issue

We advise the examiner to consider the following issue and to take appropriate action. Examiner should consider whether the question of an interference between this application (filed April 7, 1993) and US Patent No. 5,648,568 (Ohura, filed June 5,

1995) arises since this application and Ohura appear to be claiming the same patentable subject matter. We make the following observations:

With respect to this application, when for example



the reaction of claim 1 of this application [i.e., $R'CFZI + H_2 = RCFZH$] reads on the following reaction: $C_3F_7I + H_2 = C_3F_7H$, at 400°C or less in the absence of a catalyst.

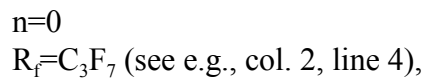
With respect to Oharu³, the representative claims read:

A method for producing a hydrofluorocarbon of the formula $H_n R_f H$ wherein n is 0 or 1, and when n is 0, R_f is a C_{2-12} linear or branched polyfluoroalkyl group, and when n is 1, R_f is a C_{2-12} linear or branched polyfluoroalkylene group, which comprises reacting an iodo fluorocarbon of the formula $I_n R_f I$ wherein n and R_f are as defined above, with hydrogen at a temperature of not higher than 450°C. in a gas phase.

The method according to claim 1, wherein the reaction is carried out in the absence of a catalyst.

When, for example,

³ Note the discussion in Oharu (col. 4, lines 4-56) on conducting the reaction in the absence of a catalyst. The catalyst, which can be selected from “conventional hydrogenation catalysts”, is employed as a means of increasing the efficiency of the reaction. However, when considering other factors, such as the complexity of the structure of the reactor or post treatment of the waste catalyst, it may be preferable not to use a catalyst. This is the type of evidence which, if it had been available in the prior art, would have strengthened examiner’s prima facie case of obviousness over Haszeldine.



Ohura (claim 14) reads on, for example, the following reaction: $C_3F_7I + H_2 =$
 C_3F_7H , at not higher than 450^0C in the absence of a catalyst.

For the reasons stated, we reverse the rejections under 35 U.S.C. § 112, first
paragraph, and § 103, and

remand to give the examiner an opportunity to consider the issue raised above.

REVERSED AND REMANDED

SHERMAN D. WINTERS
Administrative Patent Judge

WILLIAM F. SMITH
Administrative Patent Judge

HUBERT C. LORIN
Administrative Patent Judge

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